

CISE EDUCATIONAL INNOVATION (EI)

Program Solicitation

NSF-02-082

DIRECTORATE FOR COMPUTER AND INFORMATION SCIENCE AND ENGINEERING
DIVISION OF EXPERIMENTAL AND INTEGRATIVE ACTIVITIES

FULL PROPOSAL DEADLINE(S): November 4, 2002, November 1, 2004



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SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Title: CISE EDUCATIONAL INNOVATION (EI)

Synopsis of Program: The objective of this program is to stimulate innovative educational activities at the undergraduate level in the Computer and Information Science and Engineering (CISE) disciplines by encouraging the transfer of research results into the undergraduate curriculum. The program supports the design, development, testing and dissemination of innovative approaches for increasing the effectiveness of the undergraduate learning experience by integrating research results into undergraduate courses and curricula. The research may be ongoing or completed and may be drawn from any research project in the computer and information sciences and engineering fields.

Cognizant Program Officer(s):

- Anita J. La Salle, Program Director, Computer and Information Science and Engineering Directorate (CISE), Division of Experimental and Integrative Activities (EIA), Room 1160, telephone: (703) 292-8980, e-mail: alasalle@nsf.gov.
- Harry Hedges, Program Director, Computer and Information Science and Engineering Directorate (CISE), Division of Experimental and Integrative Activities (EIA), 1160, telephone: (703) 292-8980, e-mail: hhedges@nsf.gov.

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.070 --- Computer and Information Science and Engineering

ELIGIBILITY INFORMATION

- **Organization Limit:** Please see the full program announcement/solicitation for further information.
- **PI Eligibility Limit:** None
- **Limit on Number of Proposals:** Only one proposal per institution will be accepted in any one year.

AWARD INFORMATION

- **Anticipated Type of Award:** Standard Grant
- **Estimated Number of Awards:** 4-6
- **Anticipated Funding Amount:** Approximately \$2.3 million in FY2003 pending the availability of funds

PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

- **Full Proposals:** Deviations From Standard Preparation Guidelines
 - The program announcement/solicitation contains deviations from the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full program announcement/solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is required (Percentage).
- **Cost Sharing Level/Amount:** 25
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full program announcement/solicitation for further information.

C. Deadline/Target Dates

- **Letters of Intent (optional):** None
- **Preliminary Proposals (optional):** None
- **Full Proposal Deadline Date(s):** November 4, 2002, November 1, 2004

D. FastLane Requirements

- **FastLane Submission:** Required
- **FastLane Contact(s):**
 - Helen Walston, Senior Program Assistant, Computer and Information Science and Engineering Directorate (CISE), Division of Experimental and Integrative Activities (EIA), 1160, telephone: (703) 292-8980, e-mail: hwalston@nsf.gov.

PROPOSAL REVIEW INFORMATION

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full program announcement/solicitation for further information.

AWARD ADMINISTRATION INFORMATION

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

I. INTRODUCTION

The objective of the CISE Educational Innovation (EI) program is to stimulate innovative educational activities at the undergraduate level in CISE disciplines by encouraging the transfer of research results into the undergraduate curriculum.

II. PROGRAM DESCRIPTION

The EI program will support the design, development, testing and dissemination of innovative approaches for increasing the effectiveness of the undergraduate learning experience in CISE disciplines by integrating research results into undergraduate courses and curricula. The research, whether on-going or completed, may be drawn from any research project in the computer and information sciences and engineering fields. (See <http://www.cise.nsf.gov> for programs supported by CISE)

As a minimum, the set of individuals involved in a project should be chosen to ensure an appropriate level of expertise in teaching, curriculum development, and in the relevant research areas. Addition of individuals with expertise in learning sciences, education, information technologies, cognitive sciences and/or related areas, if appropriate to the project, is encouraged. It is not required that the principal investigator or other active participants in the project be the originators of the research results, which are to be transferred to the undergraduate curriculum. However, the proposal should describe the group's expertise in the research area(s).

Projects supported by the EI program are expected to act as national models of excellence by being prototypes of educational experiences for use by a broader segment of the scientific and engineering community. Consequently, successful dissemination of the project results is essential. The proposal should contain a detailed set of activities for communicating the results of the project to the CISE community. Collaboration with other institutions, particularly as part of the dissemination activities, is highly encouraged. The formality, level, and nature of this collaboration will be the decision of the institutions concerned; however the effectiveness of the dissemination activities will be part of the evaluation criteria. An institution submitting a proposal should also include a budget amount for at least one trip by the principal investigator to a major educational conference for presentation of results of the project.

III. ELIGIBILITY INFORMATION

Proposals will be accepted from any U.S. college or university that currently offers baccalaureate degree programs in any discipline supported by the CISE Directorate.

IV. AWARD INFORMATION

NSF anticipates \$2.3 million in FY2003 pending the availability of funds. Estimated number of awards and average award size/duration are subject to the quality of the proposals submitted and the availability of funds.

EI awards will have a duration of three years and are expected to range from \$300,000 to \$600,000 over the three-year period. At the current level of funding for this program, we expect 4-6 proposals to be selected for support as standard grants.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Web Site at: <http://www.nsf.gov/cgi-bin/getpub?gpg>. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from pubs@nsf.gov.

The Program Description should include:

1. A description of the educational activities to be undertaken indicating the expected results and the expected national impact of the proposed activities.
2. A detailed plan for transferring project results to other institutions and the CISE community.
3. A description of activities designed to increase participation in the project activities of underrepresented groups, where appropriate.
4. A description of the duties and responsibilities of the principal investigator and all other associated personnel.
5. A description of the project management plan and the evaluation plan to assess the impact of the proposed educational programs.
6. A description of the equipment, software, and other facilities and materials currently available to support the academic programs of the department.
7. A description of the equipment, software, and other items requested for each year with itemized and total cost, and a rationale for its selection. For equipment, include a representative manufacturer and model number, if possible. Describe maintenance costs per year and method of computation.

Proposers are reminded to identify the program solicitation number (NSF-02-082) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost sharing at a level of 25 percent of the requested total amount of NSF funds is required for all proposals submitted in response to this solicitation. The proposed cost sharing must be shown on Line M on the proposal budget. Documentation of the availability of cost sharing must be included in the proposal. Only items which would be allowable under the applicable cost principles, if charged to the project, may be included in the awardee's contribution to cost sharing. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in kind (see OMB Circular A-110, Section 23). It should be noted that contributions counted as cost sharing toward projects of another Federal agency may not be counted towards meeting the specific cost sharing requirements of the NSF award. All cost sharing amounts are subject to audit. Failure to provide the level of cost sharing reflected in the approved award budget may result in termination of the NSF award, disallowance of award costs and/or refund of award funds to NSF.

Other Budgetary Limitations:

The amount of cost sharing must be shown in the proposal in enough detail to allow NSF to determine its impact on the proposed project. Documentation of availability of cost sharing must be included in the proposal.

Eligible Project Costs:

The EI program provides support for a variety of educational activities including but not limited to the development of courses, instructional technologies, software, and other educational materials. The budget request may include a modest amount of equipment/instrumentation for faculty, staff, or students to work on the experimentation, design or development of project materials. However, the program will not directly supply funds for the purchase of equipment/instrumentation to equip laboratories intended for general student use.

C. Deadline/Target Dates

Proposals must be submitted by the following date(s):

Full Proposals by 5:00 PM local time: November 4, 2002, November 1, 2004

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this Program Solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <http://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this Program Solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see [Chapter II, Section C](#) of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane website at: <http://www.fastlane.nsf.gov>.

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The two merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgements.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria

In addition, specific criteria to be used to evaluate the proposals in this program will include the following items:

Potential of the project to act as a national model of excellence for the CISE community.

Overall merit of the proposed educational activities.

Overall merit of the research results to be transferred to the instructional domain.

Plan for dissemination of project results.

Level, nature, and appropriateness of participation by underrepresented groups.

Plan for management and operation of the project.

Plan for evaluation of the project and its impact.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the identities of reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Mail Review followed by Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation or the date of proposal receipt (whichever is later). The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at one's own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1)* or Federal Demonstration Partnership (FDP) Terms and Conditions;* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Web site at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Web site at <http://www.nsf.gov/cgi-bin/getpub?gpm>. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Web site at <http://www.gpo.gov>.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Approximately 30 days before expiration, NSF will send a notice to remind the PI of the requirement to file the final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

NSF has implemented an electronic project reporting system, available through FastLane. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding CISE EDUCATIONAL INNOVATION should be made to:

- Anita J. La Salle, Program Director, Computer and Information Science and Engineering Directorate (CISE), Division of Experimental and Integrative Activities (EIA), Room 1160, telephone: (703) 292-8980, e-mail: alasalle@nsf.gov.
- Harry Hedges, Program Director, Computer and Information Science and Engineering Directorate (CISE), Division of Experimental and Integrative Activities (EIA), 1160, telephone: (703) 292-8980, e-mail: hhedges@nsf.gov.

For questions related to the use of FastLane, contact:

- Helen Walston, Senior Program Assistant, Computer and Information Science and Engineering Directorate (CISE), Division of Experimental and Integrative Activities (EIA), 1160, telephone: (703) 292-8980, e-mail: hwalston@nsf.gov.

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF [E-Bulletin](http://www.nsf.gov/home/ebulletin), which is updated daily on the NSF web site at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's [Custom News Service](http://www.nsf.gov/home/cns/start.htm) (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF (unless otherwise specified in the eligibility requirements for a particular program).

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the program announcement/solicitation for further information.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090, FIRS at 1-800-877-8339.

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PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

Pursuant to 5 CFR 1320.5(b), an agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230, or to Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for National Science Foundation (3145-0058), 725 17th Street, N.W. Room 10235, Washington, D.C. 20503.

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